REMARKS

This amendment is in response to the Office Action of July 19, 1999 wherein the Examiner made certain technical objections to the specification and claims.

The Examiner also rejected certain claims under 35 U.S.C. 102(b) as allegedly anticipated as Elton '565. According to the Examiner, Elton discloses a cable with stranded conductors surrounded by a first semiconducting insulation layer, an intermediate layer and an outer semiconducting insulating layer connected to the ground. The Examiner asserts that the conductor can be used in a dynamoelectric machine.

Certain claims were rejected under Elton '565 in view of various references included Elton '116, Laurell, Bernhardt, Hyde, Herr and Neumeyer.

With respect to the Examiner's technical objection, it is believed that the amendments to the claims have overcome these objections. Claim 33 has been amended to conform the claim language to that of the disclosure at page 7, line 32.

The specification has been amended to delete the objectionable language.

The Examiner's rejection of the claims over the references is respecfully traversed for the reasons set forth below.

The Examiner's assertion that Elton '565 anticipates the invention does not take into account the combination claim, namely an electric plant which includes motors having a winding in the form of a cable having a conductor surrounded by a

magnetically permeable, electric field confining insulating covering. In an exemplary embodiment, the cable employs inner and outer semiconducting layers, and an intermediate solid insulation. In another embodiment, the conductor includes uninsulated strands or a combination of insulated and uninsulated strands in contact with the cover.

Elton '165 discloses that a rigid, conventionally insulated copper winding of a machine may be provided with a semiconductive grounding tape. Elton also discloses a power cable with semiconductive tape layers. However, Elton '165 does not suggest that the cable is useful in the machine. Elton '165 simply replaces a conventional grounding tape in a conventional winding of a dynamoelectric machine. The tape is a pyrolyzed glass layer covering the insulation. Elton is a low voltage application and does not confine the high voltage electric field. Also, Elton does not suggest using the cable shown in Fig. 7 in the dynamoelectric machine. Elton discloses three separate applications for the semiconducting tape, namely: a grounding tape for a conventional motor winding; a power cable application; and a protective enclosure for a digital circuit.

Also, Elton suggests that the cable could use either or both semiconducting layers. In addition, the stranded conductors are not mutually insulated.

While the present invention does not require insulated strands in low voltage applications, insulated strands are useful in high voltage, high magnetic flux applications. Also, a mixture of insulated and uninsulated conductors are likewise

useful in such applications.

Elton '165 uses pyrolyzed glass tape impregnated with epoxy surrounding the plastic insulation. The tape is not radially continuous but is wound with overlaping adjacent layers. The resin layer would likewise not be uniform. Elton' 116 that the temperature coefficients of the materials are taken into account. However, Elton generally relies on a combination of thermal and structural characteristics to maintain the cable integrity. In the present invention, the inner and outer layers and the insulation layer are essentially the same material except that the inner and outer layers may be filled with material to render them semiconducting. Elton on the other hand uses separate layers of different materials joined together in a relatively complicated process. The various layers would be more susceptible to electric field stress than the arrangement of the present invention. For example, in Elton , if the outer layer is non-uniform, the electric field stress would be likewise non-uniform and can cause failure at high voltages. However, because Elton is not so concerned with the problems of high voltage machines and fails to recognize the solution embodied in the invention.

Elton does not suggest that the cable may be used in a dynamoelectric machine. Further, Elton does not meet at least one or more of the requirements for a winding in a high voltage machine employing a cable according to the invention.

As noted above, in Elton '116, the matching of thermal coefficients does

not completely explain what is occurring. Elton is concerned with bonding problems between the tape, the resin and the insulating materials. However, even though thermal properties are recognized as important, Elton relies on improved bonding between the diverse materials which are used in a multicompotent layered structure and a complex curing processes therefor.

Elton '116 shows a mica covering in a rigid and winding bar connections. This is a complex, conventional arrangement for effecting end winding control. There is no suggestion that a continuous cable could accomplish the task. Elton '116 suffers from one or more of the shortcomings noted above for conventional cables.

Laurell discloses a conventional cable with tape insulation. Laurell suffers from heat loading resulting from the use of multiple outer layers including a PVC casing, a metal screen, an irregular tape having a voltage dependent resistivity, an insulation layer and a silicon paste.

The arrangement in Laurell shows a cable with several separate bundles of conductors. One embodiment of the invention employs mutually insulated conductive elements or strands which are provided to surpress eddy currents between the conductors of essentially the same potential. Laurell on the other hand shows an embodiment with three separately bundled cables which operate at different voltages, i.e. essentially separate circuits. Thus, it is necessary to

separate each bundle from the adjacent bundle. In the present invention, it is not necessarily required that individual conductive elements or strands be mutually insulated except in the case where it is desired to suppress eddy currents. If the mutual insulation were not used however, higher losses would result, but the system would function.

With respect to Bernhardt which employs a limiting inductance, it is not employed in a machine according to the invention. Even if the arrangement of Bernhardt could be used with the motor described in Elton, as suggested by the Examiner, Elton still does not disclose the machine according to the invention.

The specific cable dimensions are not a mere matter of choice, but are selected for high voltage operation in a cable forming a winding in a high voltage machine which is likely to be exposed to high current.

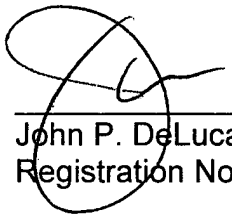
The rejection of the claims based on Hyde and Herr is respectfully traversed for the reasons stated above naming that the claimed features are part of a patentable combination. The invention is not shown or suggested in the art and is believed that the dependent claim should therefor be considered allowable.

With respect to the Examiner's rejection of the claims over Elton '565 in view of Neumeyer, it is believed that the rejection is misplaced. Elton does not show the plant essentially as claimed except for the motor being connectable to the distribution line. Further, Neumeyer does not teach a high voltage machine,

but teaches a machine in the 35kV voltage class, column 3, line 7. It is submitted that the material used in Nuemeyer has a failure voltage on the order of 100kV or greater. However, that does not mean that the electric field is confined or the machine is protected from failure at said voltages. Neumeyer shows a conventional rectangular conductor which inherently has high electric field stress in the corners which is where failure is likely to occur. It may be possible to modify Elton's device with the multiple layers of high resistance paint as disclosed in Neumyer. However, the arrangement may only result in an improved version of Elton. Further, the arrangement in Neumeyer has a surface resistance which is much higher than the surface resistance in the invention. The present invention has a relatively low surface resistance, but it is not a conductor. The surface resistance in Neumeyer is in one case four times the highest anticipated resistivity of the present invention. In any event, the combination does not show or suggest a plant employing a machine having a cable which encloses the electric field and operates at high voltages well in excess of 100kV without failure.

In view of the foregoing, it is respectfully requested that the Examiner reconsider his rejection of the claims, the allowance of which is earnestly solicited.

Respectfully submitted,



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